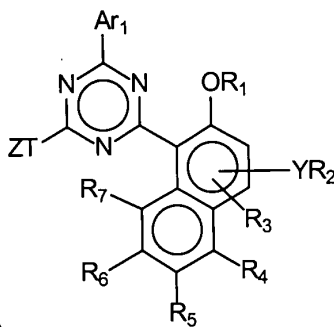


What is claimed is:

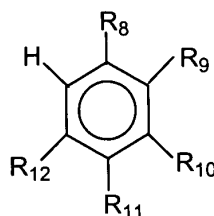
1. A triazine compound of Formula I:



Formula I

- wherein R<sub>1</sub>, R<sub>2</sub>, are the same or different and each is hydrogen, alkyl of 1 to 24 carbon atoms, alkenyl of 2 to 24 carbon atoms, acyl of 1 to 24 carbon atoms, aryl of 6 to 24 carbon atoms, cycloalkyl of 5 to 25 carbon atoms, cycloacyl of 5 to 24 carbon atoms, aralkyl of 7 to 24 carbon atoms, aracyl of 6 to 24 carbon atoms, COR, CONRR', and SO<sub>2</sub>R;
- R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> are the same or different and each is hydrogen, halogen, alkyl of 1 to 24 carbon atoms, alkenyl of 2 to 24 carbon atoms, acyl of 1 to 24 carbon atoms, aryl of 6 to 24 carbon atoms, cycloalkyl of 5 to 25 carbon atoms, cycloacyl of 5 to 24 carbon atoms, aralkyl of 7 to 24 carbon atoms, aracyl of 6 to 24 carbon atoms, OR, NRR', CONRR', OCOR, CN, SR, SO<sub>2</sub>R, SO<sub>3</sub>H, SO<sub>3</sub>M, wherein M is an alkali metal, R and R' are the same or different and each is hydrogen, alkyl of 1 to 24 carbon atoms, aryl of 6 to 24 carbon atoms, alkenyl of 2 to 24 carbon atoms, acyl of 1 to 24 carbon atoms, cycloalkyl of 1 to 24 carbon atoms, cycloacyl of 5 to 24 carbon atoms, aralkyl of 7 to 24 carbon atoms, or aracyl of 6 to 24 carbon atoms, and Y is a direct bond, O, NR'', or S, wherein R'' is hydrogen, alkyl of 1 to 24 carbon atoms, haloalkyl of 1 to 24 carbon atoms, aryl of 6 to 24 carbon atoms, alkenyl of 2 to 24 carbon atoms, acyl of 1 to 24 carbon atoms, cycloalkyl of 1 to 24 carbon atoms, cycloacyl of 5 to 24 carbon atoms, aralkyl of 7 to 24 carbon atoms, or aracyl of 7 to 24 carbon atoms;
- T is a direct bond, oxygen, NR' or sulfur; Z is a hydrogen, halogen, substituted or unsubstituted alkyl of 1 to 24 carbon atoms, alkenyl of 2 to 24 carbon atoms, acyl of 1 to 24 carbon atoms, aracyl of 7 to 24 carbon atoms, aryl of 6 to 24 carbon atoms, aralkyl of 7 to 24 carbon atoms, cycloalkyl of 5 to 24 carbon atoms, cycloacyl of 5 to 24 carbon atoms, substituted or unsubstituted alkyl of 1 to 24 carbon atoms interrupted with at least one hetero atom, cycloalkyl of 5 to 24 carbon atoms interrupted with at least one hetero atoms, CONR'''R''''', SO<sub>2</sub>R''' or Ar<sub>2</sub>,

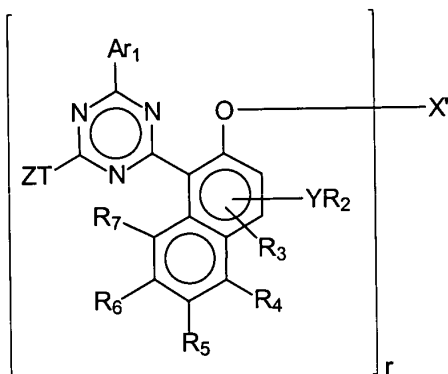
wherein R''' is substituted or unsubstituted alkyl group of 1 to 24 carbon atoms; R'''' is hydrogen or substituted or unsubstituted alkyl group of 1 to 24 carbon atoms and wherein Ar<sub>1</sub> and Ar<sub>2</sub> are each independently a radical of Formula II



Formula II

wherein R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, and R<sub>12</sub> are the same or different and each is hydrogen, halogen, alkyl of 1 to 24 carbon atoms, aryl of 6 to 24 carbon atoms, alkenyl of 2 to 24 carbon atoms, acyl of 1 to 24 carbon atoms, aralkyl of 7 to 24 carbon atoms, aracyl of 6 to 24 carbon atoms, OR, NRR', CONRR', OCOR, CN, SR, SO<sub>2</sub>R, SO<sub>3</sub>H, SO<sub>3</sub>M, wherein M is an alkali metal, and optionally with either of R<sub>8</sub> and R<sub>9</sub>, R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, or R<sub>11</sub> and R<sub>12</sub>, taken together being a part of a saturated or unsaturated fused carbocyclic ring optionally containing O, N, or S atoms in the ring with the proviso that the radical of Formula II is not a naphthyl substituted with a hydroxyl group ortho to the point of attachment to the triazine ring.

2. The compound of claim 1, wherein T is a direct bond and Z is Ar<sub>2</sub>.
3. The compound of claim 2, wherein R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> are hydrogen.
4. The compound of claim 3, wherein Y is an oxygen, R<sub>1</sub> is hydrogen, R<sub>2</sub> is hydrogen or an alkyl of 1 to 24 carbon atoms.
5. The compound of claim 3, wherein Y is a direct bond, and R<sub>1</sub> and R<sub>2</sub> are hydrogen.
6. The compound of claim 3, wherein Ar<sub>1</sub> and Ar<sub>2</sub> are selected from a group consisting of: phenyl, methylphenyl, dimethylphenyl, diphenyl, phenyl ether, tetralin, tert-butylphenyl, ethylphenyl, propylphenyl, isopropylphenyl, butylphenyl, isobutylphenyl, chlorophenyl, methoxyphenyl, hydroxyphenyl and combinations thereof.
7. A triazine compound of Formula III



Formula III

wherein T, Z, Ar<sub>1</sub>, Y, R<sub>2</sub> to R<sub>7</sub> are defined as in claim 1;  
r is 2 or 3;

when r is 2, X' is —CO—R<sup>16</sup>—CO—, —CO<sub>2</sub>—R<sup>16</sup>—CO<sub>2</sub>—, —SO<sub>2</sub>—R<sup>16</sup>—SO<sub>2</sub>—,  
—CO—NH—R<sup>17</sup>—NH—CO—, a polyoxyalkylene bridge member of formula —CO—  
(CH<sub>2</sub>)<sub>u</sub>—O—(CH<sub>2</sub>—(CH<sub>2</sub>)<sub>u</sub>—O—)<sub>mm</sub>—(CH<sub>2</sub>)<sub>u</sub>—CO—, or  
—COC(R<sup>21</sup>)HCH<sub>2</sub>NH(C<sub>nn</sub>H<sub>2nn</sub>O)<sub>m</sub>C<sub>nn</sub>H<sub>2nn</sub>—NHCH<sub>2</sub>—C(R<sup>21</sup>)HCO—

when r = 3, X' is:

—(—CO<sub>2</sub>—R<sup>16</sup>)<sub>3</sub>R<sup>19</sup>, —(—CONH—R<sup>16</sup>)<sub>3</sub>R<sup>19</sup>, —(—SO<sub>2</sub>—R<sup>16</sup>)<sub>3</sub>R<sup>19</sup>;

wherein

R<sup>16</sup> is C<sub>2</sub>—C<sub>10</sub> alkylene, C<sub>2</sub>—C<sub>10</sub> oxaalkylene or C<sub>2</sub>—C<sub>10</sub> dithiaalkylene, phenylene,  
naphthylene, diphenylene or C<sub>2</sub>—C<sub>6</sub> alkenylene;

R<sup>17</sup> is C<sub>2</sub>—C<sub>10</sub> alkylene, phenylene, naphthylene, methylenediphenylene or  
C<sub>7</sub>—C<sub>15</sub> alkylphenylene;

R<sup>19</sup> is C<sub>3</sub>—C<sub>10</sub> alkanetriyl;

R<sup>21</sup> is hydrogen or C<sub>1</sub>—C<sub>6</sub> alkyl;

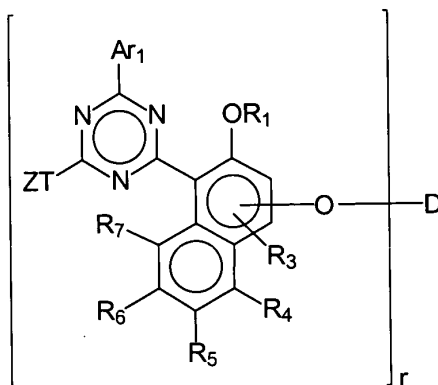
mm is an integer from 2 to 60,

nn is an integer from 2 to 6, and

u is an integer from 1 to 4.

8. A triazine compound of Formula IV

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Formula IV

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wherein T, Z, Ar<sub>1</sub>, Y, R<sub>1</sub> to R<sub>7</sub> are defined as in claim 1;  
r is an integer between 2 and 4;

- when r is 2, D is selected from the group consisting of C<sub>2</sub>—C<sub>16</sub> alkylene, C<sub>4</sub>—C<sub>12</sub> alkenylene, xylylene, C<sub>3</sub>—C<sub>20</sub> alkylene which is interrupted by one or more oxygen atoms, hydroxy-substituted C<sub>3</sub>—C<sub>20</sub> alkyl which is interrupted by one or more oxygen atoms, —CH<sub>2</sub>CH(OH)CH<sub>2</sub>O—R<sup>15</sup>—OCH<sub>2</sub>CH(OH)CH<sub>2</sub>—, —CO—R<sup>16</sup>—CO—, —CO—NH—R<sup>17</sup>—NH—CO—, —(CH<sub>2</sub>)<sub>s</sub>—COO—R<sup>18</sup>—OCO—(CH<sub>2</sub>)<sub>s</sub>— a polyoxyalkylene bridge member of the formula XX
- CH<sub>2</sub>—CH(OH)—CH<sub>2</sub>—O—(CH<sub>2</sub>—(CH<sub>2</sub>)<sub>u</sub>—O—)<sub>mm</sub>—CH<sub>2</sub>—CH(OH)—CH<sub>2</sub>— (XX), a polyoxyalkylene bridge member of the formula XXI
- CO—(CH<sub>2</sub>)<sub>u</sub>—O—(CH<sub>2</sub>—(CH<sub>2</sub>)<sub>u</sub>—O—)<sub>mm</sub>—(CH<sub>2</sub>)<sub>u</sub>—CO— (XXI), a polyoxyalkylene bridge member of the formula XXII
- YY—O—CO(CH<sub>2</sub>)<sub>u</sub>—O—(CH<sub>2</sub>—(CH<sub>2</sub>)<sub>u</sub>—O—)<sub>mm</sub>—(CH<sub>2</sub>)<sub>u</sub>—COO—YY— (XXII), a polyoxyalkylene bridge member of the formula XXIII
- (CH<sub>2</sub>)<sub>kk</sub>—CH(R<sup>21</sup>)—CO—B<sub>1</sub>—(C<sub>nn</sub>H<sub>2nn</sub>—O—)<sub>mm</sub>—C<sub>nn</sub>H<sub>2nn</sub>—B<sub>1</sub>—CO—CH(R<sup>21</sup>)—(CH<sub>2</sub>)<sub>kk</sub>— (XXIII), a polyoxyalkylene bridge member of the formula XXIV
- COC(R<sup>21</sup>)HCH<sub>2</sub>NH(C<sub>nn</sub>H<sub>2nn</sub>O)<sub>m</sub>C<sub>nn</sub>H<sub>2nn</sub>—NHCH<sub>2</sub>—C(R<sup>21</sup>)HCO— (XXIV), a polyoxyalkylene bridge member of the formula XXV
- YY—O—CO—(CH<sub>2</sub>)<sub>2</sub>—NH—(C<sub>nn</sub>H<sub>2nn</sub>—O—)<sub>mm</sub>—C<sub>nn</sub>H<sub>2nn</sub>—NH—(CH<sub>2</sub>)<sub>2</sub>COO—YY— (XXV), a polyoxyalkylene bridge member of the formula XXVI
- (C<sub>nn</sub>H<sub>2nn</sub>—O—)<sub>mm</sub>—C<sub>nn</sub>H<sub>2nn</sub>— (XXVI), and a polyoxyalkylene bridge member of the formula XXVII
- CH(CH<sub>3</sub>)—CH<sub>2</sub>—(O—CH(CH<sub>3</sub>)—CH<sub>2</sub>)<sub>a</sub>—(O—CH<sub>2</sub>—CH<sub>2</sub>)<sub>b</sub>—(O—CH<sub>2</sub>—

$\text{CH}(\text{CH}_3)_c-$

(XXVII),

wherein  $a + c = 2.5$  and  $b = 8.5$  to  $40.5$  or  $a + c = 2$  to  $33$  and  $b = 0$ ,

$\text{R}^{21}$  is hydrogen or  $\text{C}_1-\text{C}_{16}$  alkyl,

$\text{Y}\text{Y}$  is unsubstituted or substituted  $\text{C}_2-\text{C}_{20}$  alkyl,

kk is zero or an integer from 1-16,

mm is an integer from 2 to 60,

nn is an integer from 2 to 6,

u is an integer from 1 to 4;

$\text{B}_1$  is O or NH;

$\text{R}^{15}$  is  $\text{C}_2-\text{C}_{10}$  alkyl,  $\text{C}_2-\text{C}_{10}$  oxaalkyl or  $\text{C}_2-\text{C}_{10}$  dithiaalkyl, phenyl, naphthyl, diphenyl, or  $\text{C}_2-\text{C}_6$  alkenyl, or phenylene-XX-phenylene wherein XX is  $-\text{O}-$ ,  $-\text{S}-$ ,  $-\text{SO}_2-$ ,  $-\text{CH}_2-$ , or  $-\text{C}(\text{CH}_3)_2-$ ;

$\text{R}^{16}$  is  $\text{C}_2-\text{C}_{10}$  alkyl,  $\text{C}_2-\text{C}_{10}$  oxaalkyl or  $\text{C}_2-\text{C}_{10}$  dithiaalkyl, phenyl, naphthyl, diphenyl, or  $\text{C}_2-\text{C}_6$  alkenyl provided that when r is 3 the alkenyl has at least 3 carbons;

$\text{R}^{17}$  is  $\text{C}_2-\text{C}_{10}$  alkyl, phenyl, naphthyl, diphenyl, or  $\text{C}_2-\text{C}_6$  alkenyl, methylenediphenylene, or  $\text{C}_4-\text{C}_{15}$  alkylphenyl; and

$\text{R}^{18}$  is  $\text{C}_2-\text{C}_{10}$  alkyl, or  $\text{C}_4-\text{C}_{20}$  alkyl interrupted by one or more oxygen atoms.

when r is 3, D is  $-\text{[(CH}_2\text{)}_s-\text{COO-}]_3-\text{R}^{19}$

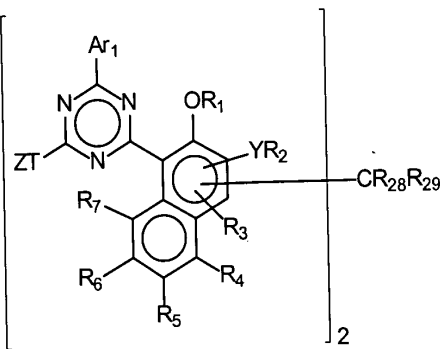
and when r is 4, D is  $-\text{[(CH}_2\text{)}_s-\text{COO-}]_4-\text{R}^{20}$

wherein  $\text{R}^{19}$  is  $\text{C}_3-\text{C}_{10}$  alkanetriyl;

$\text{R}^{20}$  is  $\text{C}_4-\text{C}_{10}$  alkanetetryl; and

s is 1-6.

9. A triazine compound of Formula V



Formula V

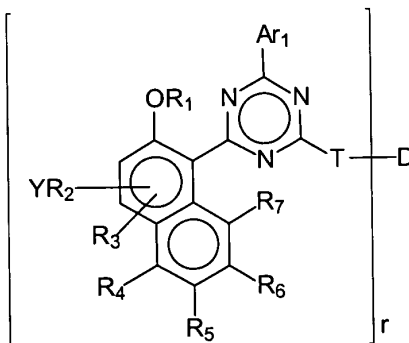
wherein T, Z, Ar<sub>1</sub>, Y, R<sub>1</sub> to R<sub>7</sub> are defined as in claim 1; ✓

and wherein R<sub>28</sub> and R<sub>29</sub> can be the same or different and each is independently a hydrogen, a C<sub>1</sub>-C<sub>20</sub> alkyl, an aryl or substituted C<sub>1</sub>-C<sub>20</sub> aryl.

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10. A triazine compound of Formula VI

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Formula VI

wherein T, Ar<sub>1</sub>, Y, R<sub>1</sub> to R<sub>7</sub> are defined as in claim 1; ✓

r is an integer between 2 and 4;

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when r is 2, D is selected from the group consisting of C<sub>2</sub>-C<sub>16</sub> alkylene, C<sub>4</sub>-C<sub>12</sub>

alkenylene, xylene, C<sub>3</sub>-C<sub>20</sub> alkylene which is interrupted by one or more oxygen

atoms, hydroxy-substituted C<sub>3</sub>-C<sub>20</sub> alkylene which is interrupted by one or more oxygen

atoms, —OOCR<sup>14</sup>COO—, —CH<sub>2</sub>CH(OH)CH<sub>2</sub>O—R<sup>15</sup>—OCH<sub>2</sub>CH(OH)CH<sub>2</sub>—, —CO—R<sup>16</sup>—

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CO—, —CO—NH—R<sup>17</sup>—NH—CO—, and —(CH<sub>2</sub>)<sub>s</sub>—COO—R<sup>18</sup>—OCO—(CH<sub>2</sub>)<sub>s</sub>—; and

when r is 3, D is —[(CH<sub>2</sub>)<sub>s</sub>—COO—]<sub>3</sub>—R<sup>19</sup>

and when r is 4, D is —[(CH<sub>2</sub>)<sub>s</sub>—COO—]<sub>4</sub>—R<sup>20</sup>

30

wherein R<sup>19</sup> is C<sub>3</sub>-C<sub>10</sub> alkanetriyl and R<sup>20</sup> is C<sub>4</sub>-C<sub>10</sub> alkanetetriyl;

s is 1-6;

R<sup>14</sup> is C<sub>1</sub>-C<sub>12</sub> alkyl or phenyl;

R<sup>15</sup> is C<sub>2</sub>-C<sub>10</sub> alkylene phenylene or a phenylene-X<sub>2</sub>-phenylene- group, wherein X<sub>2</sub> is —

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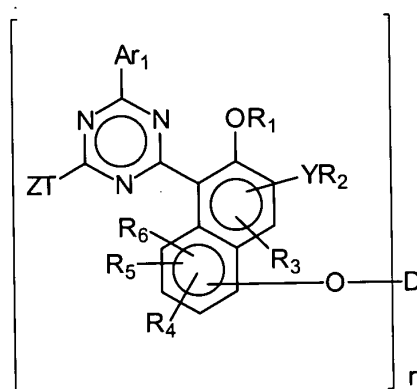
O—, —S—, —SO<sub>2</sub>—, —CH<sub>2</sub>—, or —C(CH<sub>3</sub>)<sub>2</sub>—;

$R^{16}$  is  $C_2-C_{10}$  alkylene,  $C_2-C_{10}$  oxaalkylene or  $C_2-C_{10}$  dithiaalkylene, phenylene, naphthylene, diphenylene or  $C_2-C_6$  alkenylene;

$R^{17}$  is  $C_2-C_{10}$  alkylene, phenylene, naphthylene, methylenediphenylene or  $C_7-C_{15}$  alkylphenylene, and

$R^{18}$  is  $C_2-C_{10}$  alkylene or  $C_4-C_{20}$  alkylene which is interrupted by one or more oxygen atoms.

# 11. A triazine compound of Formula VII



Formula VII

wherein T, Z,  $Ar_1$ , Y,  $R_1$  to  $R_7$  are defined as in claim 1;  
r is an integer between 2 and 4;

when r is 2, D is selected from the group consisting of  $C_2-C_{16}$  alkylene,  $C_4-C_{12}$

alkenylene, xylylene,  $C_3-C_{20}$  alkylene which is interrupted by one or more oxygen atoms, hydroxy-substituted  $C_3-C_{20}$  alkylene which is interrupted by one or more oxygen atoms,  $-OOCR^{14}COO-$ ,  $-CH_2CH(OH)CH_2O-R^{15}-OCH_2CH(OH)CH_2-$ ,  $-CO-R^{16}-CO-$ ,  $-CO-NH-R^{17}-NH-CO-$ , and  $-(CH_2)_s-COO-R^{18}-OCO-(CH_2)_s-$ ; and

when r is 3, D is  $-[(CH_2)_s-COO-]_3-R^{19}$

and when r is 4, D is  $-[(CH_2)_s-COO-]_4-R^{20}$

wherein  $R^{19}$  is  $C_3-C_{10}$  alkanetriyl and  $R^{20}$  is  $C_4-C_{10}$  alkanetetriyl;

s is 1-6;

$R^{14}$  is  $C_1-C_{12}$  alkyl or phenyl;

$R^{15}$  is  $C_2-C_{10}$  alkylene phenylene or a phenylene- $X_2$ -phenylene- group, wherein  $X_2$  is —  
 $O-$ , — $S-$ , — $SO_2-$ , — $CH_2-$ , or — $C(CH_3)_2-$ ;  
 $R^{16}$  is  $C_2-C_{10}$  alkylene,  $C_2-C_{10}$  oxaalkylene or  $C_2-C_{10}$  dithiaalkylene, phenylene,  
 naphthylene, diphenylene or  $C_2-C_6$  alkenylene;  
 5  $R^{17}$  is  $C_2-C_{10}$  alkylene, phenylene, naphthylene, methylenediphenylene or  $C_7-C_{15}$   
 alkylphenylene, and  
 $R^{18}$  is  $C_2-C_{10}$  alkylene or  $C_4-C_{20}$  alkylene which is interrupted by one or more oxygen  
 atoms.

10 12. A method of stabilizing a material comprising the step of contacting said material with the  
 triazine compounds of claims 1, 6, 7, 8, 9, 10 or 11.

13. The method of claim 12 wherein said material to be stabilized is selected from the group  
 consisting of: polyolefins, polyesters, polyethers, polyketones, polyamides, natural and synthetic  
 15 rubbers, polyurethanes, polystyrenes, high-impact polystyrenes, polyacrylates,  
 polymethacrylates, polyacetals, polyacrylonitriles, polybutadienes, polystyrenes, ABS, styrene  
 acrylonitrile, acrylate styrene acrylonitrile, cellulosic acetate butyrate, cellulosic polymers,  
 polyimides, polyamideimides, polyetherimides, polyphenylsulfides, polyphenylene oxide ,  
 polysulfones, polyethersulfones, polyvinylchlorides, polycarbonates, polyketones, aliphatic  
 20 polyketones, thermoplastic TPO's, aminoresin crosslinked polyacrylates and polyesters,  
 polyisocyanate crosslinked polyesters and polyacrylates, phenol/formaldehyde,  
 urea/formaldehyde and melamine/formaldehyde resins, drying and non-drying alkyd resins,  
 alkyd resins, polyester resins, acrylate resins cross-linked with melamine resins, urea resins,  
 isocyanates, isocyanurates, carbamates, epoxy resins, cross-linked epoxy resins derived from  
 25 aliphatic, cycloaliphatic, heterocyclic and aromatic glycidyl compounds, which are cross-linked  
 with anhydrides or amines, polysiloxanes, Michael addition polymers, amines, blocked amines  
 with activated unsaturated and methylene compounds, ketimines with activated unsaturated and  
 methylene compounds, polyketimines in combination with unsaturated acrylic polyacetoacetate  
 resins, polyketimines in combination with unsaturated acrylic resins, radiation curable  
 30 compositions, epoxymelamine resins, organic dyes, cosmetic products, cellulose-based paper  
 formulations, photographic film paper, ink, and mixtures thereof.

14. The method of claim 12 wherein the amount of said triazine compound is about 0.1 to  
 about 20% by weight based on the material to be stabilized.

35 15. A composition comprising



(a) the triazine compounds of claims 1, 6, 7, 8, 9, 10 or 11; and

(b) at least one other additive selected from the group consisting of: UV-absorbers and light stabilizers, and antioxidants.

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16. The composition of claim 15 wherein said at least one other additive is selected from the group consisting of 2-(2'-hydroxyphenyl)benzotriazoles, oxamides, 2-(2-hydroxyphenyl)-1,3,5-triazines, 2-hydroxybenzophenones, sterically hindered amines and hindered phenol antioxidants.

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17. The composition of claim 15 wherein said at least one additive is selected from the group consisting of: 2-(2'-hydroxy-5'-methylphenyl)-benzotriazole; 2-(3',5'-di-tert-butyl-2'-hydroxyphenyl)benzotriazole; 2-(5'-tert-butyl-2'-hydroxyphenyl)benzotriazole; 2-(2'-hydroxy-5'-(1,1,3,3-tetramethylbutyl)phenyl)benzotriazole; 2-(3',5'-di-tert-butyl-2'-hydroxyphenyl)-5-chlorobenzotriazole; 2-(3'-tert-butyl-2'-hydroxy-5'-methylphenyl)-5-chloro-benzotriazole; 2-(3'-sec-butyl-5'-tert-butyl-2'-hydroxyphenyl)-benzotriazole; 2-(2'-hydroxy-4'-octoxyphenyl)benzotriazole; 2-(3',5'-di-tert-amyl-2'-hydroxyphenyl)benzotriazole; 2-(3',5'-bis( $\alpha,\alpha$ -dimethylbenzyl)-2'-hydroxyphenyl)-benzotriazole; a mixture of 2-(3'-tert-butyl-2'-hydroxy-5'-(2-octyloxy-carbonyl-ethyl)phenyl)-5-chloro-benzotriazole, 2-(3'-tert-butyl-5'-[2-(2-ethylhexyloxy)-carbonyl-ethyl]-2'-hydroxyphenyl)-5-chloro-benzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-(2-methoxycarbonyl-ethyl)phenyl)-5-chloro-benzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-(2-methoxycarbonyl-ethyl)phenyl)benzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-(2-octyloxy-carbonyl-ethyl)phenyl)benzotriazole, 2-(3'-tert-butyl-5'-[2-(2-ethylhexyloxy)carbonyl-ethyl]-2'-hydroxyphenyl)benzotriazole, 2-(3'-dodecyl-2'-hydroxy-5'-methylphenyl)benzotriazole and 2-(3'-tert-butyl-2'-hydroxy-5'-(2-isooctyloxy-carbonyl-ethyl)phenyl)benzotriazole; 2,2-methylenebis[4-(1,1,3,3-tetramethylbutyl)-6-benzotriazol-2-yl]phenol], the transesterification product of 2-[3'-tert-butyl-5'-(2-methoxycarbonyl-ethyl)-2'-hydroxyphenyl]benzotriazole with polyethylene glycol 300;  $[R-CH_2CH-COO(CH_2)_3]_2$  B where R = 3'-tert-butyl-4'-hydroxy-5'-2H-benzotriazol-2-ylphenyl; bis(2,2,6,6-tetramethylpiperidin-4-yl) sebacate; bis(2,2,6,6-tetramethylpiperidin-4-yl)succinate; bis(1,2,2,6,6-pentamethylpiperidin-4-yl)sebacate; bis(1-octyloxy-2,2,6,6-tetramethylpiperidin-4-yl)sebacate; bis(1,2,2,6,6-pentamethylpiperidin-4-yl) n-butyl 3,5-di-tert-butyl-4-hydroxybenzylmalonate; the condensate of 1-(2-hydroxyethyl)-2,2,6,6-tetramethyl-4-hydroxypiperidine and succinic acid; the condensate of N,N'-bis(2,2,6,6-tetramethylpiperidin-4-yl)hexamethylenediamine and 4-tert-octylamino-2,6-dichloro-1,3,5-triazine; tris(2,2,6,6-tetramethylpiperidin-4-yl) nitrilotriacetate; tetrakis(2,2,6,6-tetramethylpiperidin-4-yl)-1,2,3,4-butanetetra-carboxylate; 1,1'-(1,2-ethanediyl)bis(3,3,5,5-tetramethylpiperazinone); 4-benzoyl-

2,2,6,6-tetramethylpiperidine; 4-stearyloxy-2,2,6,6-tetramethylpiperidine; bis(1,2,2,6,6-pentamethylpiperidyl)-2-n-butyl-2-(2-hydroxy-3,5-di-tert-butylbenzyl)malonate; 3-n-octyl-7,7,9,9-tetramethyl-1,3,8-triazaspiro[4.5]decan-2,4-dione; bis(1-octyloxy-2,2,6,6-tetramethylpiperidyl)sebacate; bis(1-octyloxy-2,2,6,6-tetramethylpiperidyl)succinate; the

5 condensate of N,N'-bis(2,2,6,6-tetramethylpiperidin-4-yl)hexamethylenediamine and 4-morpholino-2,6-dichloro-1,3,5-triazine; the condensate of 2-chloro-4,6-bis(4-n-butylamino-2,2,6,6-tetramethylpiperidyl)-1,3,5-triazine and 1,2-bis(3-aminopropylamino)ethane; the condensate of 2-chloro-4,6-bis(4-n-butylamino-1,2,2,6,6-pentamethylpiperidyl)-1,3,5-triazine and 1,2-bis(3-aminopropylamino)ethane; 8-acetyl-3-dodecyl-7,7,9,9-tetramethyl-1,3,8-

10 triazaspiro[4.5]decane-2,4-dione; 3-dodecyl-1-(2,2,6,6-tetramethylpiperidin-4-yl)pyrrolidin-2,5-dione; 3-dodecyl-1-(1-ethanoyl-2,2,6,6-tetramethylpiperidin-4-yl)pyrrolidin-2,5-dione; 3-dodecyl-1-(1,2,2,6,6-pentamethylpiperidin-4-yl)pyrrolidine-2,5-dione; a mixture of 4-hexadecyloxy- and 4-stearyloxy-2,2,6,6-tetramethylpiperidine; the condensate of N,N'-bis(2,2,6,6-tetramethylpiperidin-4-yl)hexamethylenediamine and 4-cyclohexylamino-2,6-dichloro-1,3,5-triazine; the condensate

15 of 1,2-bis(3-aminopropylamino)ethane, 2,4,6-trichloro-1,3,5-triazine and 4-butylamino-2,2,6,6-tetramethylpiperidine; 2-undecyl-7,7,9,9-tetramethyl-1-oxa-3,8-diaza-4-oxospiro[4.5]decane; oxo-piperanzinyl-triazines and the reaction product of 7,7,9,9-tetramethyl-2-cycloundecyl-1-oxa-3,8-diaza-4-oxospiro[4.5]decane and epichlorohydrin;

2,4,6-tris(2-hydroxy-4-octyloxyphenyl)-1,3,5-triazine; 2-(2-hydroxy-4-n-octyloxyphenyl)-4,6-

20 bis(2,4-dimethylphenyl)-1,3,5-triazine; 2-(2-hydroxy-4-(mixed iso-octyloxyphenyl)-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine; 2-(2,4-dihydroxyphenyl)-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine; 2,4-bis(2-hydroxy-4-propyloxyphenyl)-6-(2,4-dimethylphenyl)-1,3,5-triazine; 2-(2-hydroxy-4-octyloxyphenyl)-4,6-bis(4-methylphenyl)-1,3,5-triazine; 2-(2-hydroxy-4-dodecyloxyphenyl)-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine; 2-(2-hydroxy-4-tridecyloxyphenyl)-

25 4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine; 2-[2-hydroxy-4-(2-hydroxy-3-butyloxypropyloxy)phenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine; 2-[2-hydroxy-4-(2-hydroxy-3-octyloxypropyloxy)-phenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine; 2-[4-dodecyloxy/tridecyloxy-2-hydroxypropoxy)-2-hydroxyphenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine; 2-[2-hydroxy-4-(2-hydroxy-3-dodecyloxypropoxy)phenyl]-4,6-bis(2,4-dimethylphenyl)-

30 1,3,5-triazine; 2-(2-hydroxy-4-hexyloxy)phenyl-4,6-diphenyl-1,3,5-triazine; 2-(2-hydroxy-4-methoxyphenyl)-4,6-diphenyl-1,3,5-triazine; 2,4,6-tris[2-hydroxy-4-(3-butoxy-2-hydroxypropoxy)phenyl]-1,3,5-triazine; 2-(2-hydroxyphenyl)-4-(4-methoxyphenyl)-6-phenyl-1,3,5-triazine, 2,4-dihydroxybenzophenone; 2-hydroxy-4-methoxybenzophenone; 2-hydroxy-4-octyloxybenzophenone; 2-hydroxy-4-decyloxybenzophenone; 2-hydroxy-4-

35 dodecyloxybenzophenone; 2-hydroxy-4-benzyloxybenzophenone, 4,2',4'-trishydroxybenzophenone; 2'-hydroxy-4,4'-dimethoxybenzophenone;

1,3,5-tris(2,6-dimethyl-4-tert-butyl-3hydroxybenzyl)isocyanurate; 1,3,5-tris(3,5-di-tert-butyl-4-hydroxybenzyl)isocyanurate; 1,3,5-tris(3,5-di-tert-butyl-4-hydroxybenzyl)-2,4,6-trimethylbenzene; 2,6-di-tert-butyl-4-methylphenol; 2,2'-ethylidene-bis(4,6-di-tert-butylphenol); 1,1,3-tris(5-tert-butyl-4-hydroxy-2-methylphenyl)butane; esters of  $\beta$ -(3,5-di-tert-butyl-4-hydroxyphenyl)propionic acid with mono- or polyhydric alcohols;

5 esters of  $\beta$ -(5-tert-butyl-4-hydroxy-3-methylphenyl)propionic acid with mono- or polyhydric alcohols; dimethyl-2,5-di-tert-butyl-4-hydroxybenzylphosphonate; diethyl-3,5-di-tert-butyl-4-hydroxybenzylphosphonate; dioctadecyl-3,5-di-tert-butyl-4-hydroxybenzylphosphonate; dioctadecyl-5-tert-butyl-4-hydroxy-3-methylbenzylphosphonate; and the calcium salt of the

10 monoethyl ester of 3,5-di-tert-butyl-4-hydroxybenzylphosphonic acid; amides of  $\beta$ -(3,5-di-tert-butyl-4-hydroxyphenyl)propionic acid such as N,N'-bis(3,5-di-tert-butyl-4-hydroxyphenylpropionyl)hexamethylenediamine; N,N'-bis(3,5-di-tert-butyl-4-hydroxyphenylpropionyl)trimethylenediamine; and N,N'-bis(3,5-di-tert-butyl-4-hydroxyphenylpropionyl)hydrazine.

15 18. The composition of claim 15 further comprising a material to be stabilized, said material selected from the group consisting of: polyolefins, polyesters, polyethers, polyketones, polyamides, natural and synthetic rubbers, polyurethanes, polystyrenes, high-impact polystyrenes, polyacrylates, polymethacrylates, polyacetals, polyacrylonitriles, polybutadienes,

20 polystyrenes, ABS, styrene acrylonitrile, acrylate styrene acrylonitrile, cellulosic acetate butyrate, cellulosic polymers, polyimides, polyamideimides, polyetherimides, polyphenylsulfides, polyphenylene oxide, polysulfones, polyethersulfones, polyvinylchlorides, polycarbonates, polyketones, aliphatic polyketones, thermoplastic TPO's, aminoresin crosslinked polyacrylates and polyesters, polyisocyanate crosslinked polyesters and polyacrylates, phenol/formaldehyde,

25 urea/formaldehyde and melamine/formaldehyde resins, drying and non-drying alkyd resins, alkyd resins, polyester resins, acrylate resins cross-linked with melamine resins, urea resins, isocyanates, isocyanurates, carbamates, epoxy resins, cross-linked epoxy resins derived from aliphatic, cycloaliphatic, heterocyclic and aromatic glycidyl compounds, which are cross-linked

30 with anhydrides or amines, polysiloxanes, Michael addition polymers, amines, blocked amines with activated unsaturated and methylene compounds, ketimines with activated unsaturated and methylene compounds, polyketimines in combination with unsaturated acrylic polyacetoacetate resins, polyketimines in combination with unsaturated acrylic resins, radiation curable compositions, epoxymelamine resins, organic dyes, cosmetic products, cellulose-based paper formulations, photographic film paper, ink, and mixtures thereof.

Year	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
Population	1,000,000	1,050,000	1,100,000	1,150,000	1,200,000	1,250,000	1,300,000	1,350,000	1,400,000	1,450,000	1,500,000	1,550,000	1,600,000	1,650,000	1,700,000	1,750,000	1,800,000	1,850,000	1,900,000	1,950,000	2,000,000	2,050,000	2,100,000	2,150,000	2,200,000	2,250,000	2,300,000	2,350,000	2,400,000	2,450,000	2,500,000	2,550,000	2,600,000	2,650,000	2,700,000	2,750,000	2,800,000	2,850,000	2,900,000	2,950,000	3,000,000	3,050,000	3,100,000	3,150,000	3,200,000	3,250,000	3,300,000	3,350,000	3,400,000	3,450,000	3,500,000	3,550,000	3,600,000	3,650,000	3,700,000	3,750,000	3,800,000	3,850,000	3,900,000	3,950,000	4,000,000	4,050,000	4,100,000	4,150,000	4,200,000	4,250,000	4,300,000	4,350,000	4,400,000	4,450,000	4,500,000	4,550,000	4,600,000	4,650,000	4,700,000	4,750,000	4,800,000	4,850,000	4,900,000	4,950,000	5,000,000	5,050,000	5,100,000	5,150,000	5,200,000	5,250,000	5,300,000	5,350,000	5,400,000	5,450,000	5,500,000	5,550,000	5,600,000	5,650,000	5,700,000	5,750,000	5,800,000	5,850,000	5,900,000	5,950,000	6,000,000	6,050,000	6,100,000	6,150,000	6,200,000	6,250,000	6,300,000	6,350,000	6,400,000	6,450,000	6,500,000	6,550,000	6,600,000	6,650,000	6,700,000	6,750,000	6,800,000	6,850,000	6,900,000	6,950,000	7,000,000	7,050,000	7,100,000	7,150,000	7,200,000	7,250,000	7,300,000	7,350,000	7,400,000	7,450,000	7,500,000	7,550,000	7,600,000	7,650,000	7,700,000	7,750,000	7,80																																																																